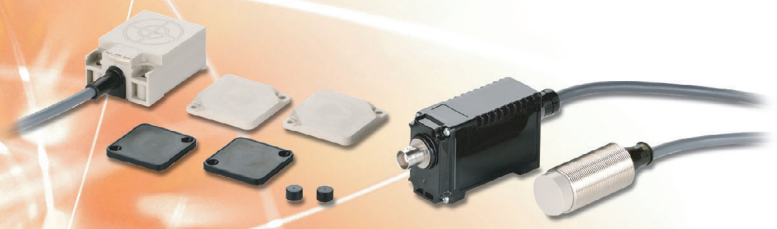
NEW

RFID System

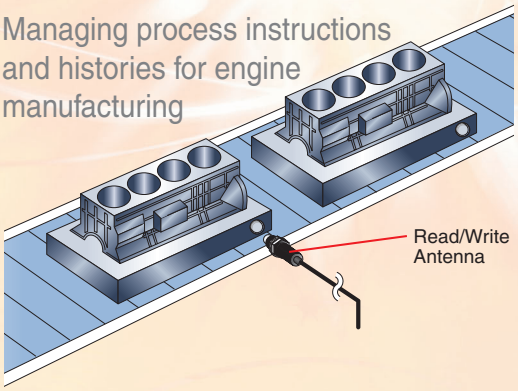
V680 Series

Next-Generation RFID System
Conforming to ISO 18000-3 (ISO 15693)

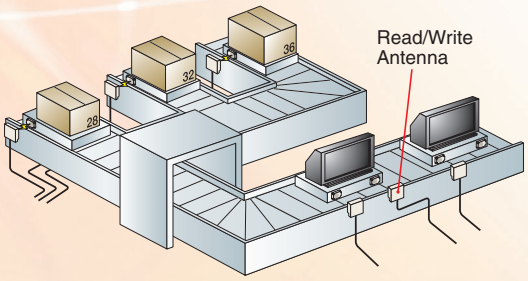
Visualize data transmission on production lines.



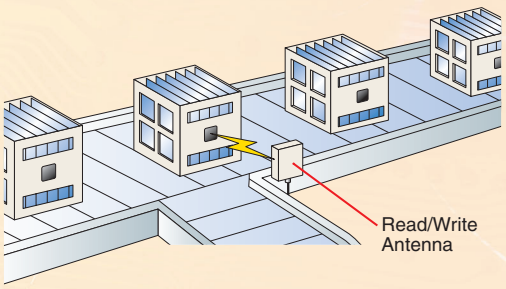
Managing process instructions and histories for engine manufacturing



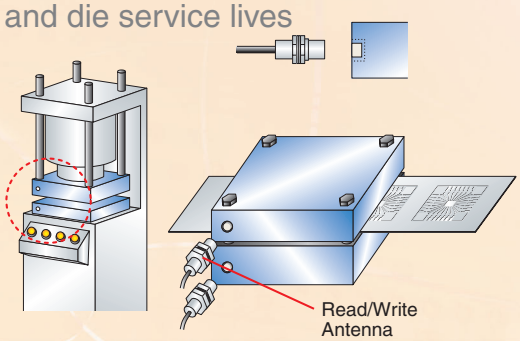
Managing manufacturing process traceability



Managing the manufacture of LCDs and color filters



Managing dies, die histories, and die service lives



realizing

Diverse Functions for Optimal Use on Production Lines

Conforms to ISO 18000-3 (ISO 15693)

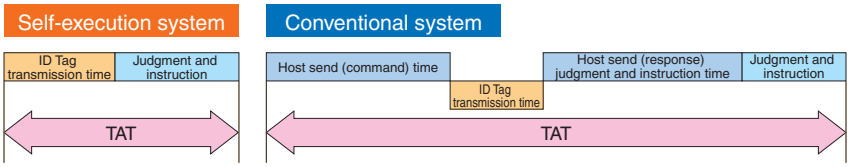
Can be used in many countries around the world.

The V680 Series meets the requirements of the radio wave regulations of Japan, Europe, and North America. (Approval applications have also been filed in various other countries. Contact your OMRON sales representative for details on applicable countries.)

Enables High-speed Data Transmission

High-speed transmission of 27 kbps achieved.

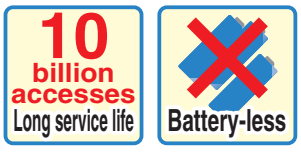
The V680 Series offers data transmission speeds as high as 27 kbps at an operating frequency of 13.56 MHz, and dramatically shortens turn around time (TAT) with a Self-execution Mode that eliminates the need for host access.



A Wide Range of ID Tags Available for Various Production Lines

These ultra-compact Tags also feature high environmental durability, long service lives, and battery-less operation.

- The same ID Tag model can be either embedded in metal or mounted on non-metallic objects. Embedding in metal requires no extra attachments.
- The 2-Kbyte memory has a long service life of 10,000,000,000 accesses.
- The V680 Series features the same level of environmental durability as the previous V600 Series.



No Changes Needed when Switching from an Existing System

The V680 Series also supports V600-series commands, so there is no need to change command systems.

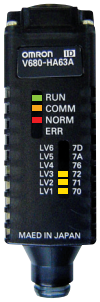
Easier Startup and Maintenance. Simpler Operation.

Lets You Visualize Data Transmission

Contributes to higher efficiency for on-site startup and maintenance.

Seven maintenance modes make it easy to diagnose the optimal usage conditions for the V680 RFID System. Startup is also easier because the system can be checked without having to use a personal computer or other host device.

Maintenance modes are quickly switched with the DIP switch on the front of the Controller.

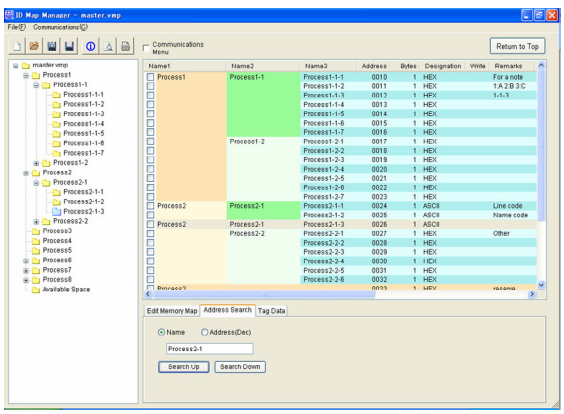


The Amplifier Unit is also equipped with an indicator that displays the communications condition, for easy confirmation from the location nearest the production line.

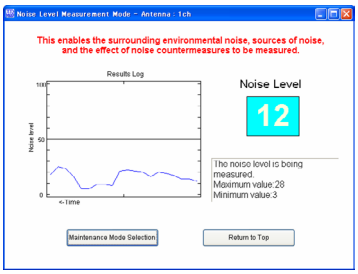
Strong Support for Creating ID Tag Memory Maps

Using the ID Map Manager dramatically shortens the time required to allocate ID Tag memory and complete system designs.

Work efficiency is greatly increased because the ID Map Manager includes an ID Tag read/write test function and communications checking function in addition to memory map definition and editing functions.
Memory map data created by the ID Map Manager can also be easily shared between the production line design department and the vendors that are building the line.



V680-A-IMMEG-P01


This enables the surrounding environmental noise, sources of noise, and the effect of noise countermeasures to be measured.
Results Log
Noise Level
12
Maintenance Mode Selection
Return to Top

Visualize Data Transmission without the Need for a Host Device. Perform Simple Diagnosis of Communications Conditions.

Distance Level Measurement Mode

Confirms correct mounting positions for the Read/Write Antenna and ID Tag.

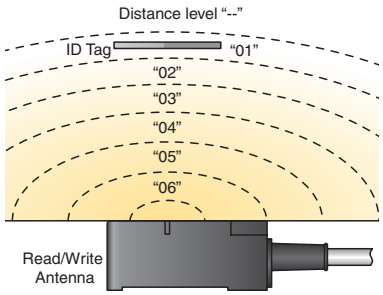
The distance between the Read/Write Antenna and ID Tag mounting locations relative to the communications range is displayed using six levels.

Controller

Distant

Close

Amplifier Unit



Noise Level Measurement Mode

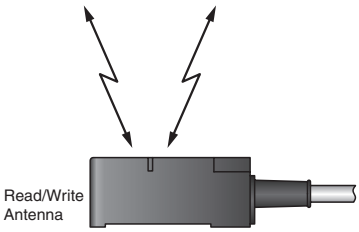
Confirms spatial noise, noise sources, and noise countermeasure effects.

Measures the ambient noise level and displays it in levels ranging from 00 to 99.

Controller

Little noise

Much noise



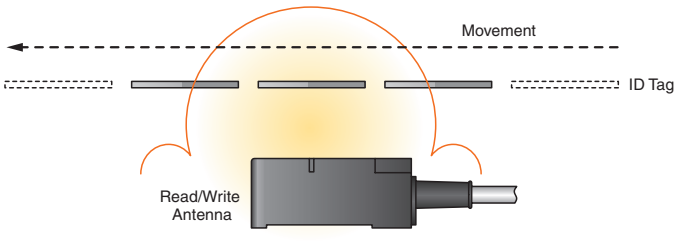
Speed Level Measurement Mode (Read/Write)

Confirms the speed of moving ID Tags and the number of usable bytes.

Data is transmitted repeatedly to moving ID Tags, and the number of successful communications and speed level are displayed in levels ranging from 01 to 99.
(No data is actually written to the ID Tags during the write part of the Speed Level Measurement Mode.)

Controller

More than 99 successful communications



Seven maintenance modes make it easy to diagnose the communications conditions from the front panel of the Controller or Amplifier Unit. The data can also be output from the USB port of the Controller to a personal computer or other monitoring device.

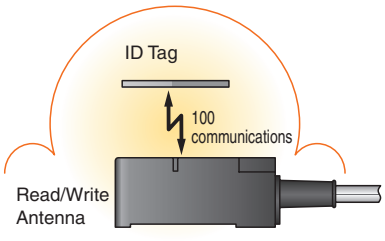
Communications Success Rate Measurement Mode

Confirms the communications success rate between the Read/Write Antenna and ID Tags.

A total of 100 communications are executed without retries, and the rate of communications success is displayed in levels ranging from 01 to 99.

Controller

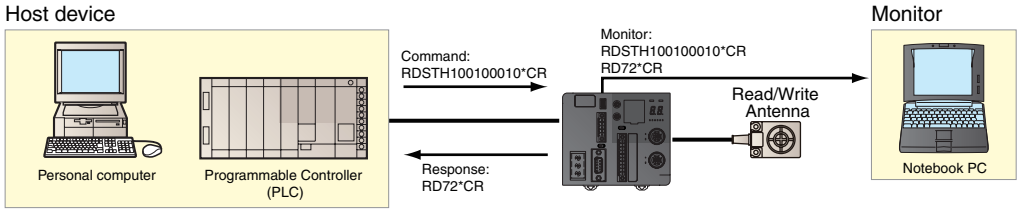
Communications successes: 23



Host Device Communications Monitor Mode (Protocol Analyzer Function)

This mode can be used as a protocol analyzer function for host device communications lines.

The communications commands sent from the host device and the execution result responses can be output from the USB port of the Controller.



Tag Communications Test Mode

Confirms communications ability between the Read/Write Antenna and ID Tags.

The end codes are displayed to show the results of communications between the Read/Write Antenna and ID Tags. When the Controller is mounted inside a control panel, or in some other location, this data can be output from the Controller's USB port and easily checked on a monitor.
(The Tag Communications Test Mode uses only read operations.)

Controller

Normal communication

Communications error

Host Device Communications Confirmation Mode

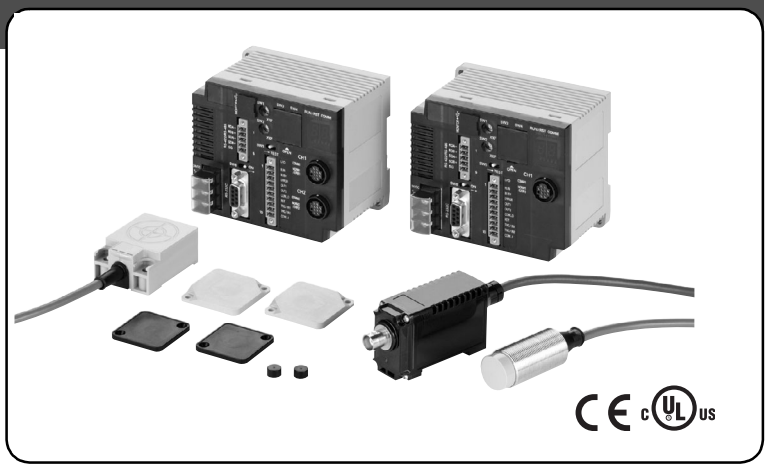
Confirms whether the signals sent from the Controller are being correctly transferred to an external device.

The communications commands and responses between the Controller and a host device are output from the Controller's USB port for easy identification of problems, such as incorrect communications parameters or wiring.

OMRON

RFID System

V680 Series



New, Next-generation RFID Systems with ISO 18000-3 (ISO15693) Compliance

- High-speed, 27-kbps transmission.
- Wide line-up of ultra-compact size, long-life, 2-Kbyte ID Tags. (New 1-Kbyte ID Tags available soon.)
- Seven modes make it possible to visualize data transmission.
- ID Map Manager simplifies memory map designing for ID Tags.
- Complies with FCC Standards and R&TTE Directive.

System Configuration

ID Tag

1-Kbyte memory
V680-D1KP52MT
(8 dia. × 5 mm)
For embedding in metallic or non-metallic surface

Available soon.

V680-D1KP66MT
(34 × 34 × 3.5 mm)
For flush mounting on metallic surface

Available soon.

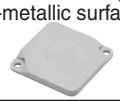
V680-D1KP66T
(34 × 34 × 3.5 mm)
For flush mounting on non-metallic surface

Available soon.

2-Kbyte memory
V680-D2KF52M
(8 dia. × 5 mm)
For embedding in metallic or non-metallic surface

V680-D2KF67M
(40 × 40 × 4.5 mm)
For flush mounting on metallic surface

V680-D2KF67
(40 × 40 × 4.5 mm)
For flush mounting on non-metallic surface



Read/Write Antenna

Cylinder type
V680-HS52

Square type
V680-HS63

-W: Standard cable, waterproof connector
-R: Flexible cable, non-waterproof connector

Amplifier Unit

V680-HA63A

V680-HA63B

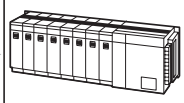
Controller

1-channel type
V680-CA5D01

2-channel type
V680-CA5D02

Personal computer

Programmable Controller



Ordering Information

ID Tag

Type	Memory capacity	Appearance	Size	Metallic compatibility	Model
Battery-less	1 Kbyte		Cylindrical, ultra-compact 8 dia. × 5 mm	For embedding in metallic or non-metallic surface	V680-D1KP52MT Available soon.
			Square 34 × 34 × 3.5 mm	For flush mounting on metallic surface	V680-D1KP66MT Available soon.
				For flush mounting on non-metallic surface	V680-D1KP66T Available soon.
	2 Kbytes		Cylindrical, ultra-compact 8 dia. × 5 mm	For embedding in metallic or non-metallic surface	V680-D2KF52M
			Square 40 × 40 × 4.5 mm	For flush mounting on metallic surface	V680-D2KF67M
				For flush mounting on non-metallic surface	V680-D2KF67

Read/Write Antenna (Detachable Amplifier Unit Type)

Type		Appearance	Size	Cable length	Model
Cylindrical	Standard cable, waterproof connector		M22 × 65 mm	2 m	V680-HS52-W 2M
				12.5 m	V680-HS52-W 12.5M
	Flexible cable, non-waterproof connector			2 m	V680-HS52-R 2M
				12.5 m	V680-HS52-R 12.5M
Square	Standard cable, waterproof connector		40 × 53 × 23 mm	2 m	V680-HS63-W 2M
				12.5 m	V680-HS63-W 12.5M
	Flexible cable, non-waterproof connector			2 m	V680-HS63-R 2M
				12.5 m	V680-HS63-R 12.5M

Amplifier Unit

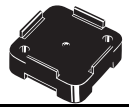
Type	Appearance	Size	Cable length	Model
For 1-Kbyte memory		25 × 40 × 65 mm	5 m	V680-HA63A 5M
			10 m	V680-HA63A 10M
For 2-Kbyte memory			5 m	V680-HA63B 5M
			10 m	V680-HA63B 10M

Controller

Type	No. of connectable Amplifiers	Appearance	Size	Transmission interface	Model
DC power supply	Single		105 × 90 × 65 mm	RS232C, RS422/RS485	V680-CA5D01
	Dual				V680-CA5D02

Accessories

ID Tag Attachment (Order Separately)

Type	Appearance	Model
For the V680-D1KP66T		V600-A86

Amplifier Unit Extension Cable (Order Separately)

Cable length	Appearance	Model
10 m		V700-A43 10 M
20 m		V700-A44 20 M

RS-232C Communications Connector (Order Separately)

Name	Model
Connector Plug	XM3B-0922-111
Connector Hood	XM2S-0911

RS-422/RS-485 Communications Connector (Accessory)
Setting Tool (ID Map Manager)

Type	Model
English version	V680-A-IMMEG-P01

Ratings and Performance

ID Tag (1-Kbyte Memory)

Item / Model	V680-D1KP52MT	V680-D1KP66T	V680-D1KP66MT
Memory capacity	1 Kbyte (user area)		
Memory type	EEPROM		
Data storage time	10 years (after the data is written)		
Memory life	Number of accesses: 100,000 times per address (at 25°C)		
Ambient operating temperature (during transmission)	–25 to 85°C (with no icing)		
Ambient operating temperature (not during transmission)	–40 to 125°C (with no icing) Heat resistance: 1,000 thermal cycles each of 30 minutes at –10°C/150°C, High-temperature storage: 1,000 hours at 150°C (See Note 1.)		
Ambient storage temperature	–40 to 125°C (with no icing)		
Ambient operating humidity	35 to 95%		
Degree of protection	IEC 60529, IP68 IP67G (JEM)		
Vibration resistance	10 to 2,000 Hz, 1.5-mm double amplitude at 150 m/s^2 acceleration with 10 sweeps in X, Y, and Z directions for 15 minutes each		
Shock resistance	500 m/s^2 in X, Y, and Z directions 3 times each (18 times in total)		
Appearance	8 dia. × 5 mm	34 × 34 × 3.5 mm	
Materials	Case: PPS resin Filling: Epoxy resin	Molding: PPS resin	
Weight	Approx. 0.5 g	Approx. 6 g	Approx. 7.5 g
Metallic compatibility	Yes	No	Yes

Note 1. 150°C heat resistance: The heat resistance has been checked at 150°C for up to 1,000 hours, and thermal shock has been checked through testing 1,000 thermal cycles each of 30 minutes at –10/150°C. (Test samples: 22, defects: 0)

2. For details, refer to the *User's Manual* (Cat. No. Z248).

ID Tag (2-Kbyte Memory)

Item / Model	V680-D2KF52M	V680-D2KF67	V680-D1KF67M
Memory capacity	2 Kbytes		
Memory type	FRAM		
Data storage time	10 years (at 55°C max.)		
Memory life	Number of accesses: 10,000,000,000 times per address (at 85°C)		
Ambient operating temperature	–25 to 85°C (with no icing)		
Ambient storage temperature	–40 to 85°C (with no icing)		
Ambient operating humidity	35 to 95%	35 to 85%	
Degree of protection	IP67 (JEM)		
Vibration resistance	10 to 2,000 Hz, 1.5-mm double amplitude at 150 m/s^2 acceleration with 10 sweeps in X, Y, and Z directions for 15 minutes each		
Shock resistance	500 m/s^2 in X, Y, and Z directions 3 times each (18 times in total)		
Appearance	8 dia. × 5 mm	40 × 40 × 4.5 mm	
Materials	Case: PPS resin Filling: Epoxy resin	Molding: ABS resin Filling: Epoxy resin	
Weight	Approx. 0.5 g	Approx. 6.5 g	Approx. 7 g
Metallic compatibility	Yes	No	Yes

Cylindrical Read/Write Antenna (Detachable Amplifier Unit Type)

Model / Item	V680-HS52-W (Standard Cable, Waterproof Connector)	V680-HS52-R (Flexible Cable, Non-waterproof Connector)
Ambient operating temperature	–10 to 60°C (with no icing)	
Ambient storage temperature	–25 to 75°C (with no icing)	
Ambient operating humidity	35% to 95% (with no condensation)	
Insulation resistance	20 MΩ min. (at 500 VDC) between the cable terminals and the case	
Dielectric strength	1,000 VAC (50/60 Hz) for 1 minute between the cable terminals and the case with a current leakage of 5 mA max.	
Degree of protection	IP67G (Sensor Head) (See note 1.)	IP67G (Sensor Head) (See note 2.)
Vibration resistance	10 to 500 Hz variable vibration, 1.5-mm double amplitude at 100 m/s^2 acceleration, with 10 sweeps in X, Y, and Z directions for 8 minutes each	
Shock resistance	500 m/s^2 in X, Y, and Z directions 3 times each (18 times in total)	
Appearance	M22 × 65 mm	
Materials	ABS, brass, epoxy resin filling	
Weight	Approx. 850 g (with 12.5-m cable)	
Cable length	2 m, 12.5 m	

Note 1. The degree of protection for the Connector is IP67/IP65.

2. The Connector is not waterproof.

3. For details, refer to the *User's Manual* (Cat. No. Z248).

Square Read/Write Antenna (Detachable Amplifier Unit Type)

Item \ Model	V680-HS63-W (Standard Cable, Waterproof Connector)	V680-HS63-R (Flexible Cable, Non-waterproof Connector)
Ambient operating temperature	−10 to 60°C (with no icing)	
Ambient storage temperature	−25 to 75°C (with no icing)	
Ambient operating humidity	35% to 95% (with no condensation)	
Insulation resistance	20 MΩ min. (at 500 VDC) between the cable terminals and the case	
Dielectric strength	1,000 VAC (50/60 Hz) for 1 minute between the cable terminals and the case with a current leakage of 5 mA max.	
Degree of protection	IP67G (Sensor Head) (See note 1.)	IP67G (Sensor Head) (See note 2.)
Vibration resistance	10 to 500 Hz variable vibration, 1.5-mm double amplitude at 100 m/s^2 acceleration, with 10 sweeps in X, Y, and Z directions for 11 minutes each	
Shock resistance	500 m/s^2 in X, Y, and Z directions 3 times each (18 times in total)	
Appearance	40 × 53 × 23 mm	
Materials	ABS, epoxy resin filling	
Weight	Approx. 850 g (with 12.5-m cable)	
Cable length	2 m, 12.5 m	

Note 1. The degree of protection for the Connector is IP67/IP65.

2. The Connector is not waterproof.

3. For details, refer to the *User's Manual* (Cat. No. Z248).

Amplifier Unit

Item \ Model	V680-HA63A	V680-HA63B
Ambient operating temperature	−10 to 55°C (with no icing)	
Ambient storage temperature	−25 to 65°C (with no icing)	
Ambient operating humidity	35% to 85% (with no condensation)	
Insulation resistance	20 MΩ min. (at 500 VDC) between the cable terminals and the case	
Dielectric strength	1,000 VAC (50/60 Hz) for 1 minute between the cable terminals and the case with a current leakage of 5 mA max.	
Degree of protection	IP40 (IEC60529) See note 1.	IP67/IP65 (IEC60529) See note 2.
Vibration resistance	10 to 500 Hz variable vibration, 1.5-mm double amplitude at 100 m/s^2 acceleration, with 10 sweeps in X, Y, and Z directions for 11 minutes each	
Shock resistance	500 m/s^2 in X, Y, and Z directions 3 times each (18 times in total)	
Appearance	25 × 40 × 65 mm (not including projections)	
Material	Polycarbonate (PC) resin	
Weight	Approx. 650 g (with 10-m cable)	
Cable length	5 m, 10 m (See note 3.)	
Transmittable ID Tags	1-Kbyte memory	2-Kbyte memory

Note 1. When connected to the V680-HS63-R or V680-HS52-R.

2. When connected to the V680-HS63-W or V680-HS52-W. (Not including the Connector on the Controller.)

3. The maximum extendable cable length is 50 m (including the Amplifier Unit Cable). The maximum number of cables that can be connected is two.

4. For details, refer to the *User's Manual* (Cat. No. Z248).

Controller

Item / Model	V680-CA5D01	V680-CA5D02
Power supply voltage Power consumption	24 VDC (–15% to +10%) 15 W max., 0.8 A max.	
Ambient operating temperature	–10 to 55°C (with no icing)	
Ambient operating humidity	25% to 85% (with no condensation)	
Ambient storage temperature	–25 to 65°C (with no icing)	
Ambient storage humidity	25% to 85% (with no condensation)	
Insulation resistance	20 MΩ min. (at 500 VDC) applied as follows: (1) Between power supply terminals and grounded case (2) Between ground and terminals	
Dielectric strength	1,000 VAC (50/60 Hz) for 1 minute (1) Between power supply terminals and grounded case (2) Between ground and terminals	
Degree of protection	Panel mounted (equivalent to IP20)	
Vibration resistance	10 to 150 Hz variable vibration, 0.2-mm double amplitude at 15 m/s^2 acceleration, with 10 sweeps in X, Y, and Z directions for 8 minutes each	
Shock resistance	150 m/s^2	
Appearance	105 × 90 × 65 mm (not including projections)	
Material	Polycarbonate (PC) resin, ABS resin	
Weight	Approx. 300 g	
Mounting method	DIN Track or M4 screws	
Connectable Amplifier Units	1	2

Note: For details, refer to the *User's Manual* (Cat. No. Z249).

Transmission Specifications

Item	Specifications	
	RS-232C	**RS-422/RS-485**
Connector specifications	9-pin D-Sub connector with threaded socket: M2.6	5-pin connector mfd. by Phoenix Contact: MC1.5/5GF-3.5
Transmission method	Half-duplex serial	4-wire/2-wire half-duplex serial
Transmission speed	9,600/19,200/38,400/115,200 bps	
Data length	7 or 8 bits	
Stop bit length	1 or 2 bits	
Error detection	Parity (even/odd/none)	
Cable length	15 m max.	500 m max.

■ Input/Output Specifications

Input Specifications (RST, TRG1, TRG2)

Input voltage	24 VDC (+10% to –15%, including ripple) (PNP and NPN compatible)
Input impedance	2.2 kΩ
Input current	10 mA TYP (24 VDC)
ON voltage	19 V min.
OFF voltage	5 V max.
Input response	70 ms max.

Output Specifications (RUN, BUSY, OUT3, ERROR, OUT4, OUT1, OUT2)

Maximum switching capacity	24 VDC (+10% to –15%, including ripple) 100-mA photoMOS output (PNP and NPN compatible)
Leakage current	100 μA max.
Residual voltage	2.0 V max.

Note 1. When RST input is ON, the CPU halts operation and the RST LED lights. The ERROR output is then reset.

2. Short-circuiting in a no-load condition may cause transistor damage.

■ USB Port

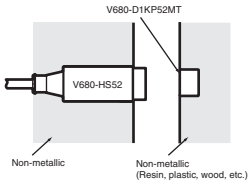
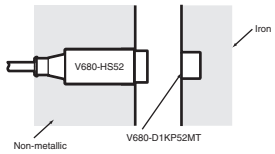
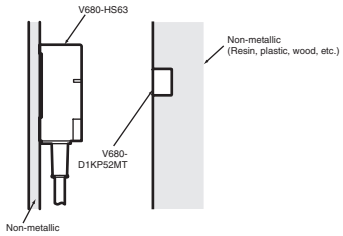
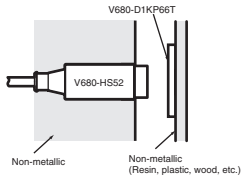
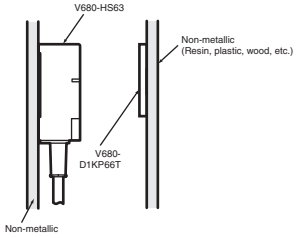
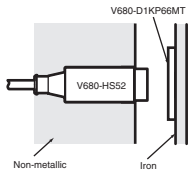
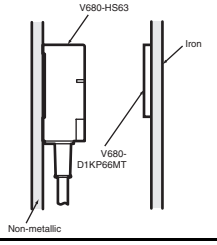
The USB port is used for a simple connection with a personal computer using a USB cable. The port complies with USB 1.1, and the USB cable uses a series A or series mini-B connector. A USB port driver must be separately provided. Consult with your OMRON representative for details.

When connected to a host device via USB, the communications will use 1:1 protocol regardless of the setting of DIP switches 3 to 9.

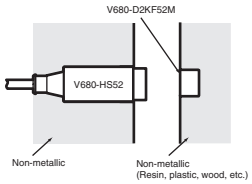
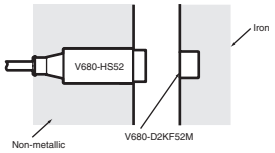
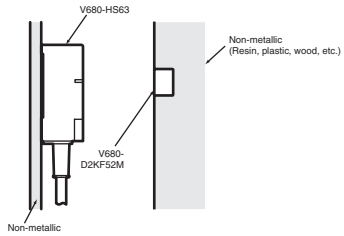
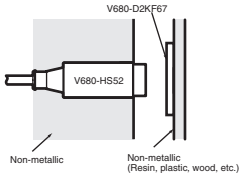
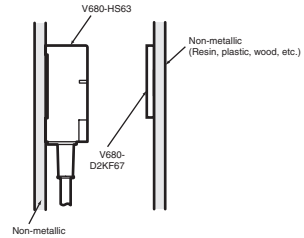
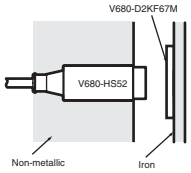
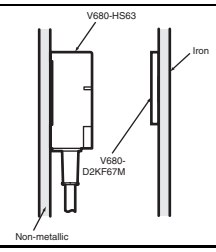
The USB port is not used for control purposes. When building a system, be sure to provide an RS-232C port or RS-422/ RS-485C port.

■ Performance Specifications

ID Tag (1-kbyte Memory) Transmission

Recommended combination		Function	Transmission distance (unit: mm)	ID Tag and Read/Write Antenna mounting conditions
ID Tag	Read/Write Antenna			
V680-D1KP52MT	V680-HS52	Read distance	0 to 9.0 mm (axial deviation ±2)	
		Write distance	0 to 8.5 mm (axial deviation ±2)	
V680-D1KP52MT (embedded in metallic surface: steel)	V680-HS52	Read distance	0 to 4.5 mm (axial deviation ±2)	
		Write distance	0 to 4.0 mm (axial deviation ±2)	
V680-D1KP52MT	V680-HS63	Read distance	0 to 12.0 mm (axial deviation ±2)	
		Write distance	0 to 9.5 mm (axial deviation ±2)	
V680-D1KP66T	V680-HS52	Read distance	0 to 17.0 mm (axial deviation ±2)	
		Write distance	0 to 17.0 mm (axial deviation ±2)	
	V680-HS63	Read distance	0 to 30.0 mm (axial deviation ±10)	
		Write distance	0 to 25.0 mm (axial deviation ±10)	
V680-D1KP66MT (flush-mounted on metallic surface: steel)	V680-HS52	Read distance	0 to 16.0 mm (axial deviation ±2)	
		Write distance	0 to 14.0 mm (axial deviation ±2)	
	V680-HS63	Read distance	0 to 25.0 mm (axial deviation ±10)	
		Write distance	0 to 20.0 mm (axial deviation ±10)	

ID Tag (2-kbyte Memory) Transmission

Recommended combination		Function	Transmission distance (unit: mm)	ID Tag and Read/Write Antenna mounting conditions
ID Tag	**Read/Write Antenna**			
V680-D2KF52M	V680-HS52	Read distance	0 to 8.0 mm (axial deviation ±2)	
		Write distance	0 to 8.0 mm (axial deviation ±2)	
V680-D2KF52M (embedded in metallic surface: steel)	V680-HS52	Read distance	0 to 3.0 mm (axial deviation ±2)	
		Write distance	0 to 3.0 mm (axial deviation ±2)	
V680-D2KF52M	V680-HS63	Read distance	0 to 9.5 mm (axial deviation ±2)	
		Write distance	0 to 9.5 mm (axial deviation ±2)	
V680-D2KF67	V680-HS52	Read distance	0 to 17.0 mm (axial deviation ±2)	
		Write distance	0 to 17.0 mm (axial deviation ±2)	
	V680-HS63	Read distance	7 to 30.0 mm (axial deviation ±10)	
		Write distance	7 to 30.0 mm (axial deviation ±10)	
V680-D2KF67M (flush-mounted on metallic surface: steel)	V680-HS52	Read distance	0 to 16.0 mm (axial deviation ±2)	
		Write distance	0 to 16.0 mm (axial deviation ±2)	
	V680-HS63	Read distance	6 to 25.0 mm (axial deviation ±10)	
		Write distance	6 to 25.0 mm (axial deviation ±10)	

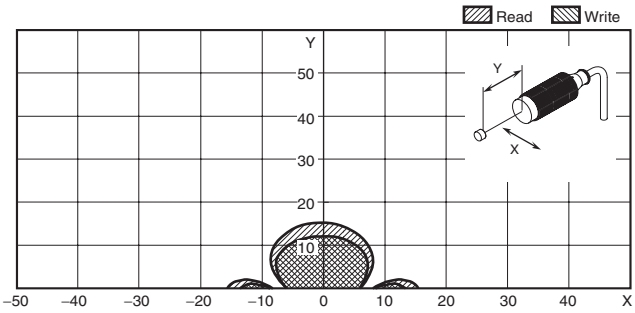
Characteristic Data (Typical)

Transmission Range

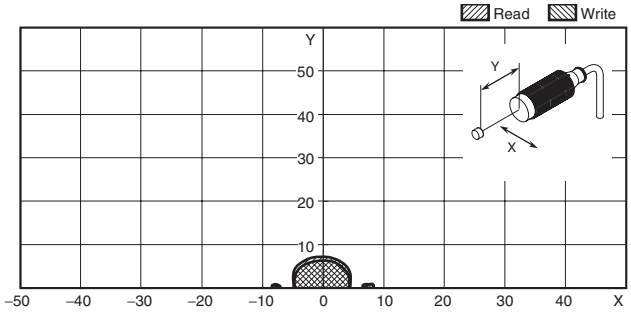
(unit: mm)

1-kbyte Memory ID Tag

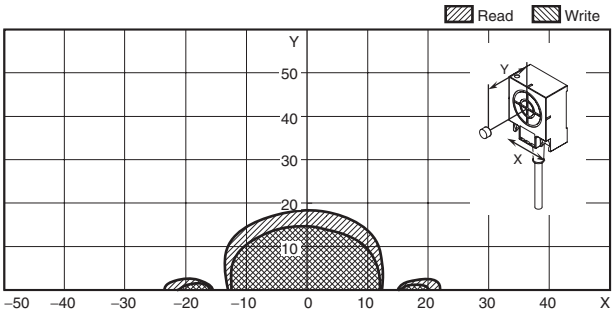
V680-HS52 & V680-D1KP52MT



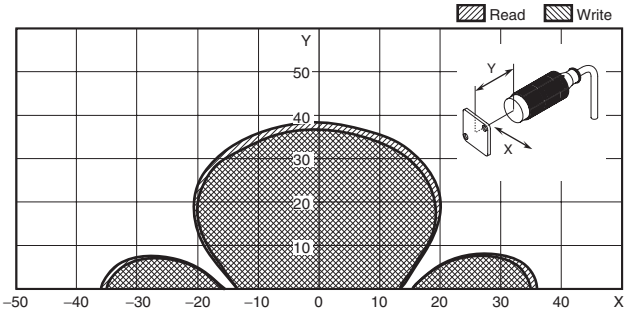
V680-HS52 & V680-D1KP52MT (embedded in metallic surface: steel)



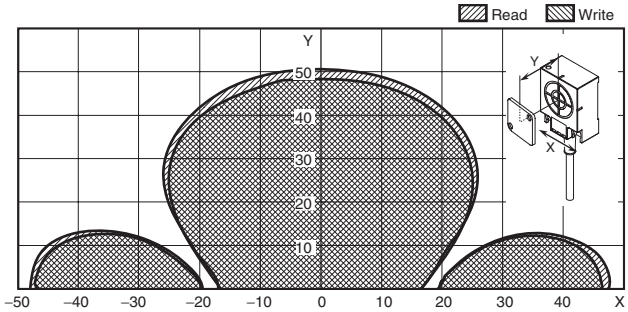
V680-HS63 & V680-D1KP52MT



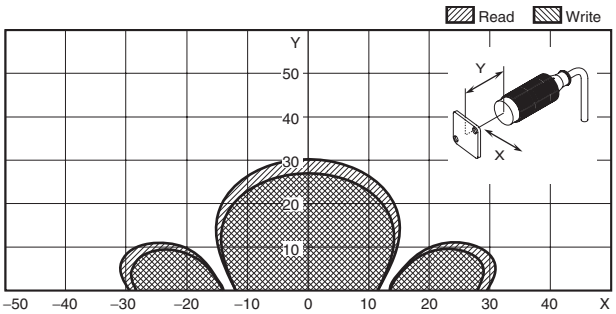
V680-HS52 & V680-D1KP66T



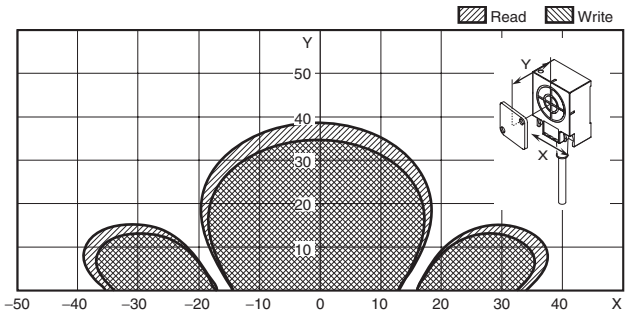
V680-HS63 & V680-D1KP66T



V680-HS52 & V680-D1KP66MT (flush-mounted on metallic surface: steel)

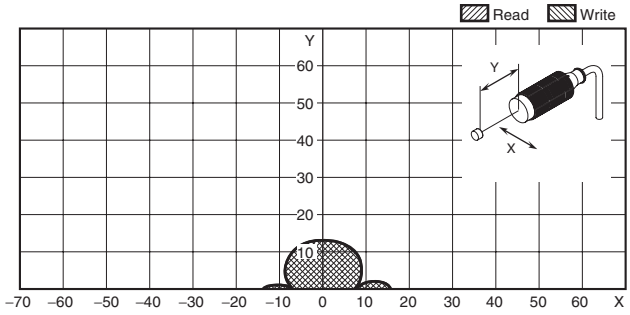


V680-HS63 & V680-D1KP66MT (flush-mounted on metallic surface: steel)

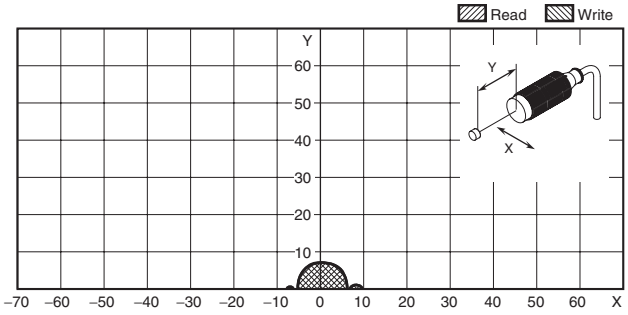


2-kbyte Memory ID Tag

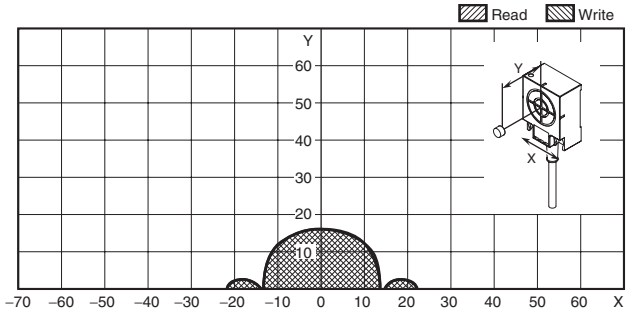
V680-HS52 & V680-D2KF52M



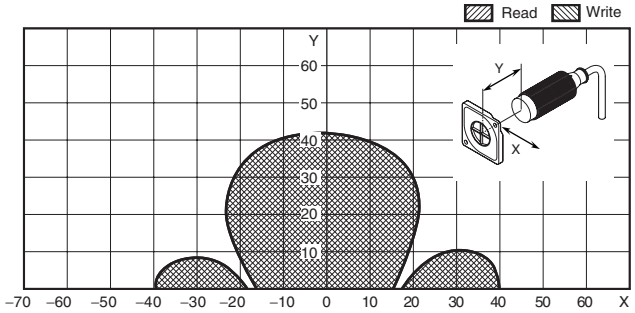
V680-HS52 & V680-D2KF52M (embedded in metallic surface: steel)



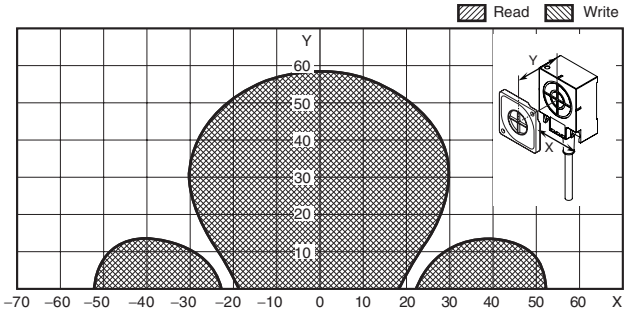
V680-HS63 & V680-D2KF52M



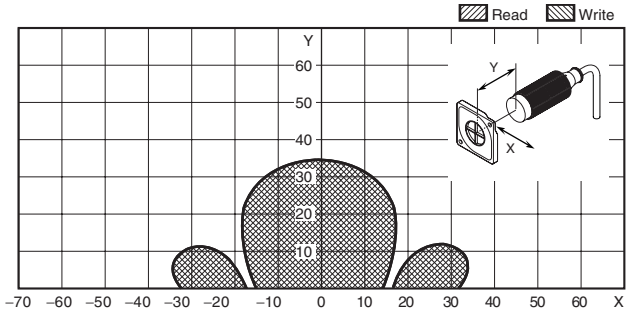
V680-HS52 & V680-D2KF67



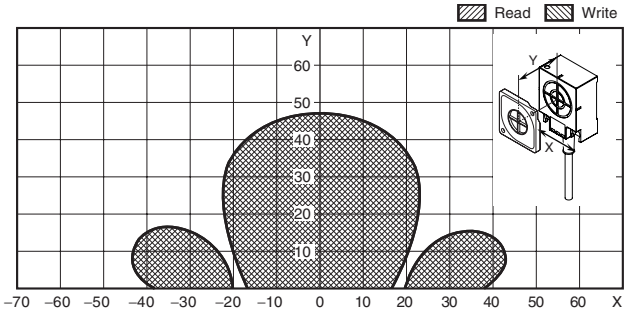
V680-HS63 & V680-D2KF67



V680-HS52 & V680-D2KF67M (flush-mounted on metallic surface: steel)



V680-HS63 & V680-D2KF67M (flush-mounted on metallic surface: steel)

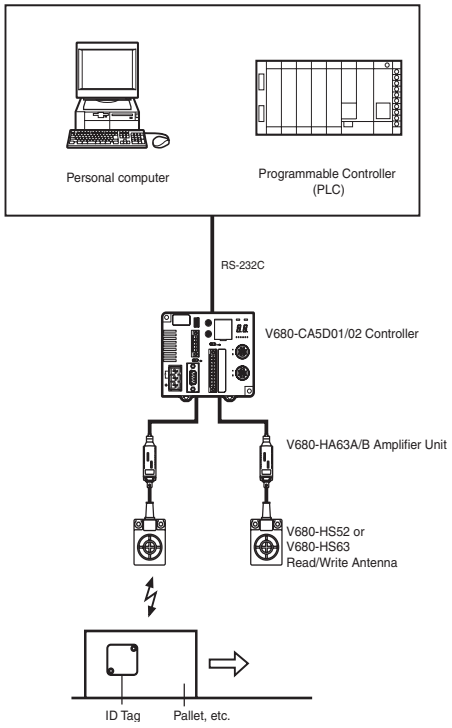


System Configuration

All V680-series Read/Write Antennas, Amplifier Units, and ID Tags can be connected. Transmission is also possible with ID Tags complying with ISO 18000-3 (ISO 15693). However, transmission may not be possible if tags other than V680-series ID Tags are used. The user must confirm transmission capabilities carefully prior to use.

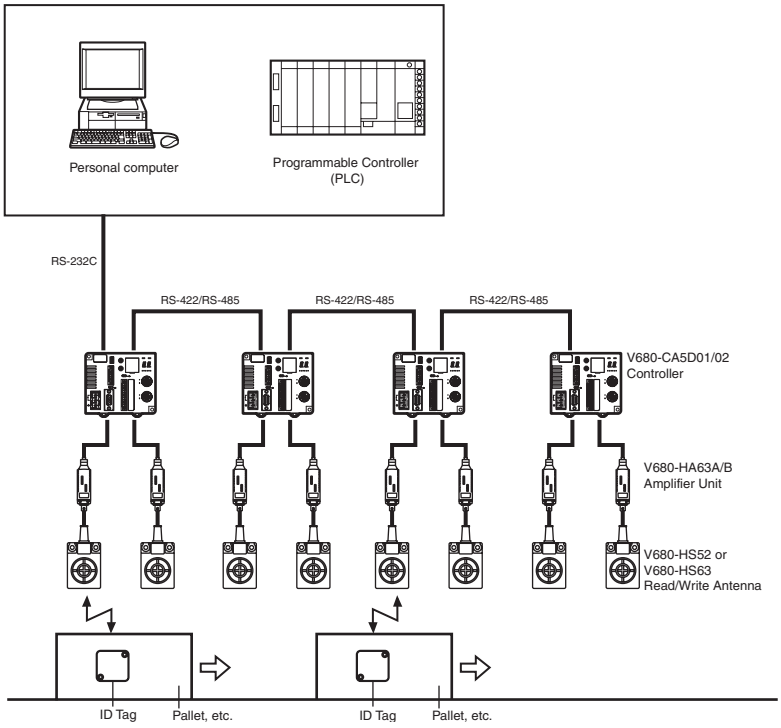
1:1 Connection

The host device is connected using RS-232C.



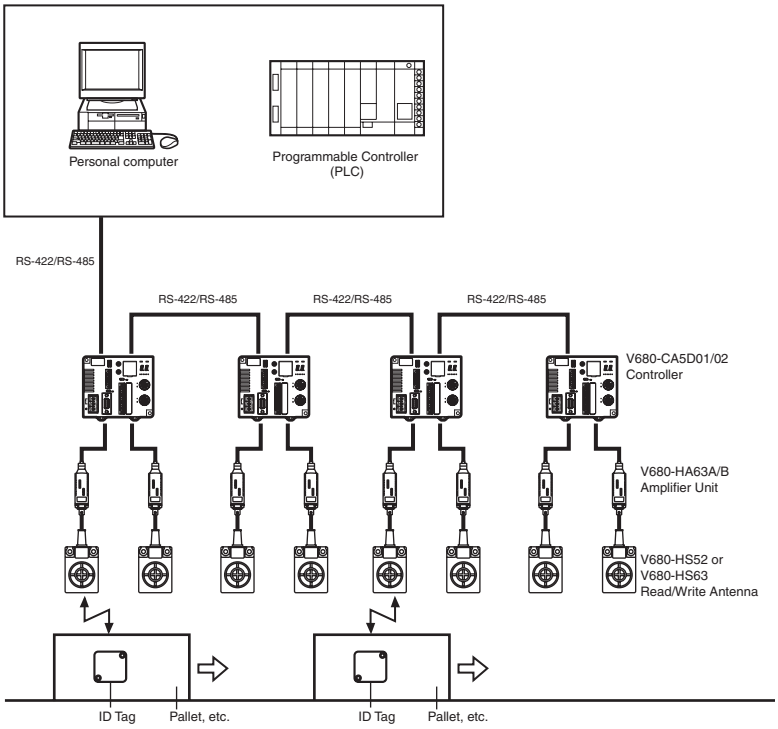
1:N Connection (RS-232C Connection with Host Device)

The host device is connected using RS-232C, and other Controllers are connected using RS-422/RS-485.



1:N Connection (RS-422/RS-485 Connection with Host Device)

The host device is connected using RS-422 or RS-485, and other Controllers are also connected using RS-422/RS-485.



Note: For details, refer to the *User's Manual* (Cat. No. Z248 and Z249).

■ Effects of Metal

V680-D1KP52MT

The transmission distance varies when there is metal around or behind the ID Tag.

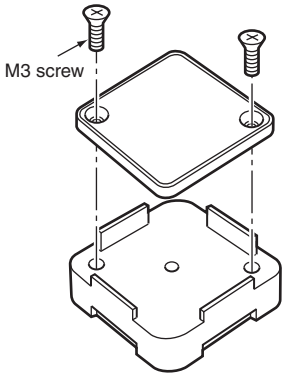
	Steel	SUS	Brass	Aluminum
V680-D1KP52MT	100%	85 to 90%	80 to 85%	80 to 85%

V680-D1KP66T

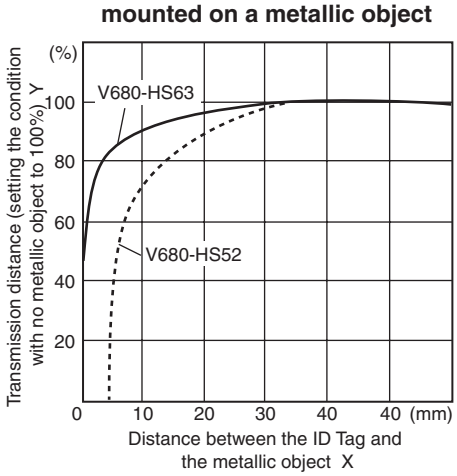
The transmission distance for the V680-D1KP66T will be reduced if there is metal in back of the ID Tag. When mounting on a metal surface, use the optional V600-A86 Attachment, or insert a non-metallic spacer (e.g., plastic, resin, etc.). The following diagram shows the relationship of the distance between an ID Tag and a metal surface and the transmission distance.

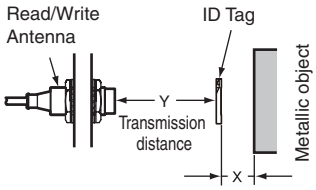
The V600-A86 Attachment is 10-mm thick and more than one can be stacked and used if necessary.

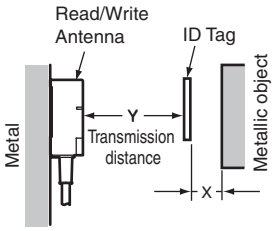
Mounting the V600-A86 Attachment



Transmission distance when mounted on a metallic object



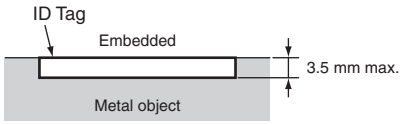


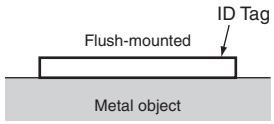


Note: Align the direction of the Attachment so the mounting hole positions match.

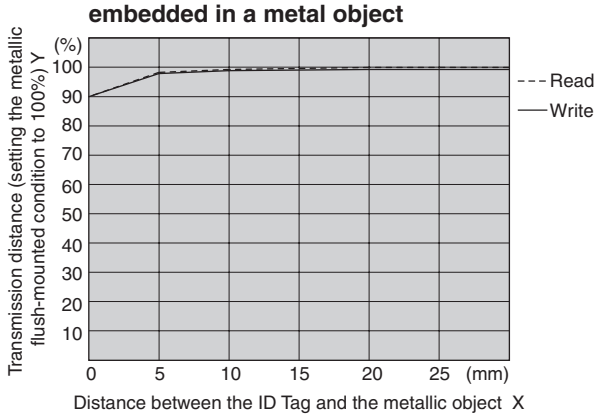
V680-D1KP66MT

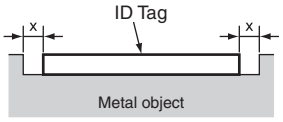
The V680-D1KP66MT can be either flush-mounted or embedded in a metallic object, however, do not allow the height of the metal to exceed the height of the ID Tag.





Transmission distance when embedded in a metal object





V680-D2KF52M

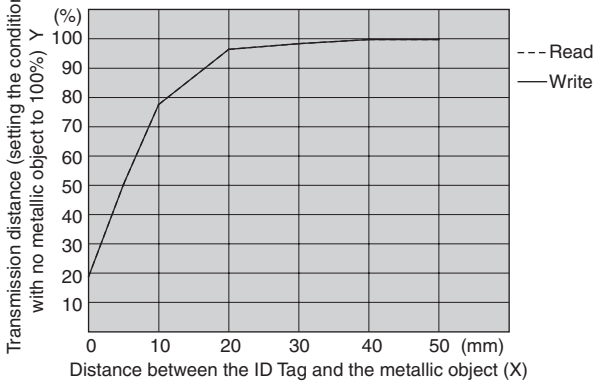
The transmission distance varies depending on the type of any metal around or behind the ID Tag.

	Steel	SUS	Brass	Aluminum
V680-D2KF52M	100%	80 to 85%	80 to 85%	75 to 80%

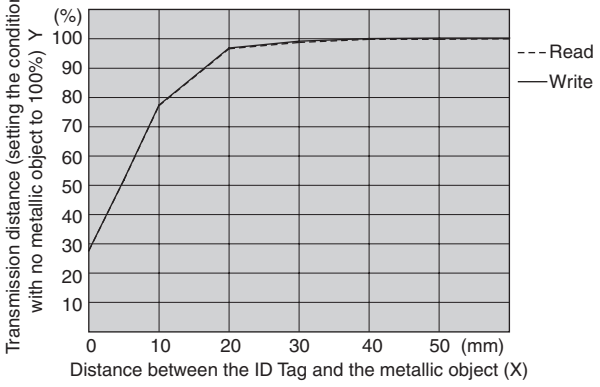
V680-D2KF67

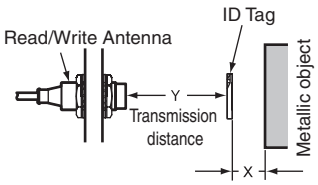
The transmission distance of the V680-D2KF67 ID Tag will be reduced if there is a metallic object behind it.

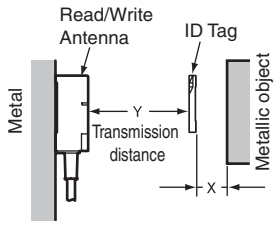
●V680-HS52 & V680-D2KF67



●V680-HS63 & V680-D2KF67

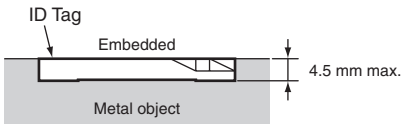


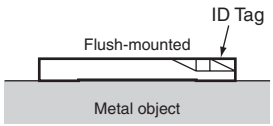




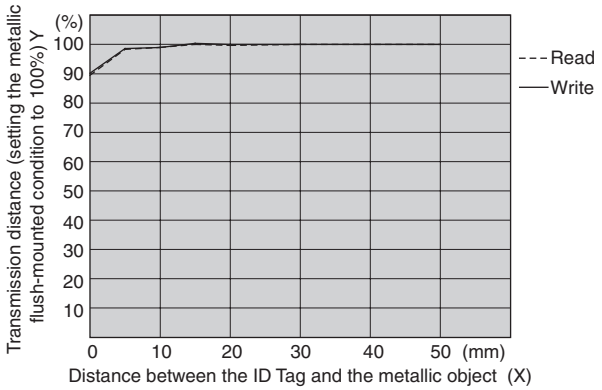
V680-D2KF67M

The V680-D2KF67M can be either flush-mounted or embedded in a metallic object, however, do not allow the height of the metal to exceed the height of the ID Tag.

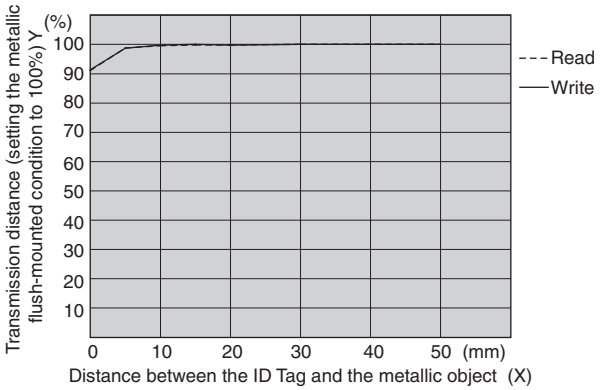


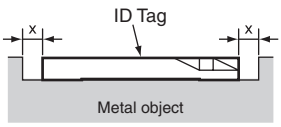


●V680-HS52 & V680-D2KF67M



●V680-HS63 & V680-D2KF67M





■ TAT and Communications Time (Reference)

Tags with 2-KB Memory

READ (RD)

Number of bytes to processed (byte)	9,600 bps		19,200 bps		38,400 bps		115,200 bps	
	TAT (msec)	Communication time (msec)	TAT (msec)	Communication time (msec)	TAT (msec)	Communication time (msec)	TAT (msec)	Communication time (msec)
100	281	140	209	139	174	139	150	138
256	637	317	477	317	396	317	342	317
512	1230	616	922	616	769	616	667	617
1000	2360	1190	1780	1190	1480	1190	1290	1190
2000	4690	2360	3520	2370	2950	2370	2560	2370

Write (Verification disabled) (WT)

Number of bytes to processed (byte)	9,600 bps		19,200 bps		38,400 bps		115,200 bps	
	TAT (msec)	Communication time (msec)	TAT (msec)	Communication time (msec)	TAT (msec)	Communication time (msec)	TAT (msec)	Communication time (msec)
100	295	158	226	158	192	158	168	158
256	642	328	485	328	406	327	352	327
512	1240	630	934	628	778	630	677	628
1000	2370	1210	1780	1210	1490	1200	1300	1200
2000	4680	2370	3540	2380	2960	2380	2570	2380

Write (Verification enabled) (WT)

Number of bytes to processed (byte)	9,600 bps		19,200 bps		38,400 bps		115,200 bps	
	TAT (msec)	Communication time (msec)	TAT (msec)	Communication time (msec)	TAT (msec)	Communication time (msec)	TAT (msec)	Communication time (msec)
100	413	278	345	277	311	277	287	276
256	934	620	778	622	699	621	645	620
512	1820	1220	1520	1220	1370	1220	1260	1220
1000	3510	2340	2940	2350	2640	2350	2450	2350
2000	6990	4670	5830	4680	5260	4670	4870	4680

Note 1. The value given for the TAT data assumes that the communications settings for the V680-CA5D01/02 ID Controller are as follows:
Data length: 8 bits, Stop bits: 1, Parity: Odd
In this example, communications are continuous, with go gaps between characters.

2. The number of bytes of TAT data is the number of bytes when ASCII is specified as the code.

TAT (Turn Around Time)

TAT refers to the total time required from the point at which a host device (such as a personal computer) starts sending a command until a response is received.

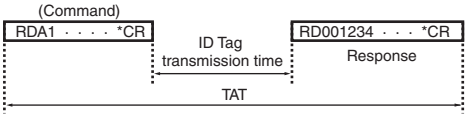
TAT = Command send time + ID Tag transmission time + response receipt time

Command send time: This is the time required for sending a command from the host device to the Controller. It varies depending on the communications speed and format.

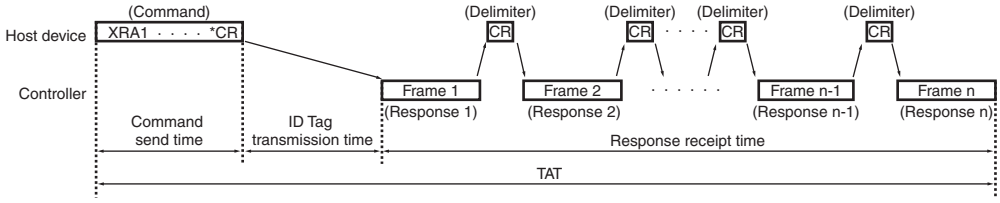
ID Tag transmission time: This is the time required for transmission between the Read/Write Antenna and the ID Tag.

Response receipt time: This is the time required for returning a response from the Controller to the host device. It varies depending on the communications speed and format.

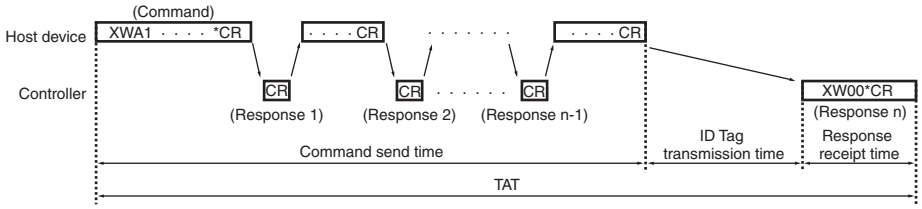
For an ordinary command



For an expansion read command



For an expansion write command



Precautions

⚠ WARNING

Do not use this product as a detection device to protect people.

Note: This catalog is intended only to help select the appropriate product. Be sure to read the User's Manual for usage precautions prior to using the product.

Precautions for Safe Use

To ensure safety, be sure to follow the following precautions:

1. Do not operate this product in any flammable, explosive, or corrosive gas environment.
2. Do not disassemble, repair, or remodel this product.
3. Tighten the base lock screws and terminal block screws completely.
4. Be sure to use wiring crimp terminals of the specified size.
5. If any cable has a locking mechanism, be sure to check that it has been locked before using it.
6. The DC power supply must be within the specified rating (24 VDC +10%/–15%).
7. Do not reverse the power supply connection.
8. Do not insert water, wire, etc., into any of the gaps in the case. Doing so may cause fire or electric shock.
9. Turn OFF the Controller power before attaching or removing the Read/Write Antenna.
10. In the event that the product exhibits any abnormal condition, immediately stop using the system, turn OFF the power, and contact your OMRON sales representative.
11. Dispose of this product as industrial waste.
12. Be sure to follow any other warnings, cautions, and notices given in this document.

Precautions for Correct Use

Please observe the following precautions to prevent failure to operate, malfunctions, or undesirable effects on product performance.

Installation Site

Install the product at a location where:

- It is not exposed to corrosive gases, dust, metal chips, or salt.
- The working temperature is within the range stipulated in the specifications.
- There are no sudden variations in temperature (no condensation).
- The relative humidity is within the range stipulated in the specifications.
- No vibration or shock exceeding the values stipulated in the specifications is transmitted directly to the body of the product.
- It is not subject to splashing water, oil, or chemical substances.

Installation

- The product uses the 13.56-MHz frequency band to communicate with ID Tags. Some devices, such as some motors, inverters, and switching power supplies, generate electromagnetic waves (i.e., noise) that can affect communications with ID Tags. If any of these devices are nearby, communications with ID Tags may be affected or ID Tags may be destroyed. If the product is to be used near such devices, check the effects on communications before using the product.
- To minimize the general influence of noise, observe the following precautions:
  1. Ground any metallic material located around this device to 100 Ω or less.
  2. Keep the product away from high voltage and heavy current.
- Do not use products that are not waterproof in misty environments.
- Do not subject the products to chemicals that adversely affect product materials.
- When installing the product, tighten screws to the following torque:

  Controller: 1.2 N·m max.

  V680-HS63 Read/Write Antenna: 1.2 N·m

  V680-HS52 Read/Write Antenna: 40 N·m
- When Read/Write Antennas are mounted side-by-side, mutual interference may reduce the transmission performance. Refer to the *V680 Series RFID System Amplifier and Antennas/ID Tags User's Manual* (Cat. No. Z248) to mount them in a way that will prevent mutual interference.

Storage

Store the product at a location where:

- It is not exposed to corrosive gases, dust, metal chips, or salt.
- The storage temperature is within the range stipulated in the specifications.
- There are no sudden variations in temperature (no condensation).
- The relative humidity is within the range stipulated in the specifications.
- No vibration or shock exceeding the values stipulated in the specifications is transmitted directly to the body of the product.
- It is not subject to splashing water, oil, or chemical substances.

Cleaning

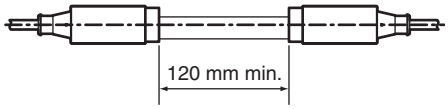
Do not use thinner, benzene, acetone, or kerosene for cleaning. Using these substances may dissolve the resin material and the case.

Mutual Interference between Antennas (Reference)

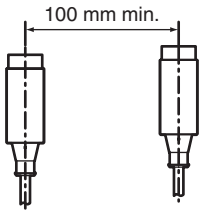
To prevent malfunction due to mutual interference when using multiple Read/Write Antennas, allow the spaces shown below between antennas.

V680-HS52

• When mounted facing each other

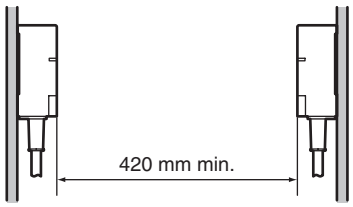


• When mounted parallel to each other

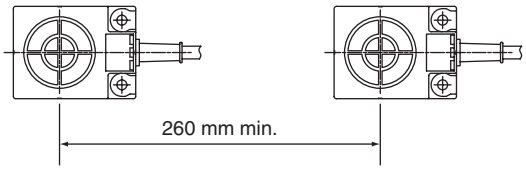


V680-HS63

• When mounted facing each other



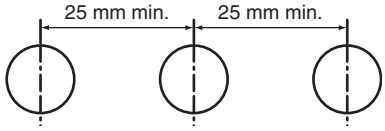
• When mounted parallel to each other



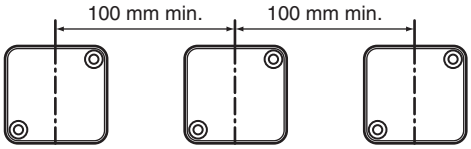
Mutual Interference between ID Tags (Reference)

To prevent malfunction due to mutual interference when using multiple ID Tags, allow the spaces shown below between antennas.

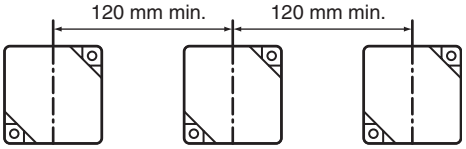
V680-D1KP52MT



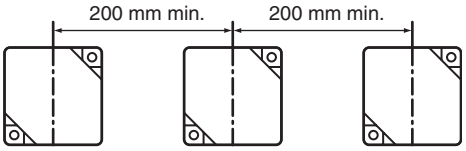
V680-D1KP66T/-D1KP66MT



V680-D2KF67M



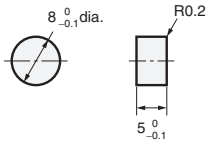
V680-D2KF67



Dimensions

Note: All units are in millimeters unless otherwise indicated.

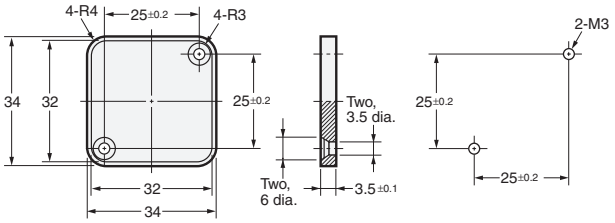
V680-D1KP52MT



Case material	PPS resin
Filling	Epoxy resin

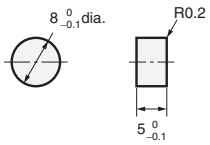
V680-D1KP66T/-D1KP66MT

Mounting Hole Dimensions



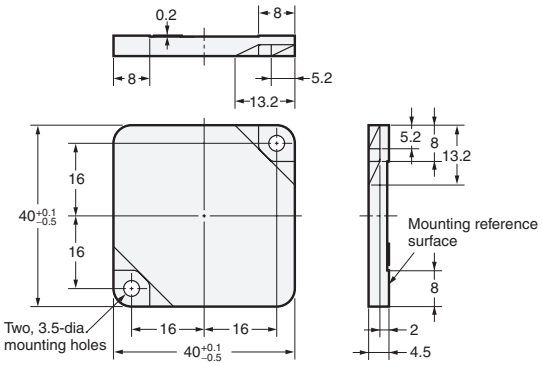
Case material	PPS resin

V680-D2KF52M

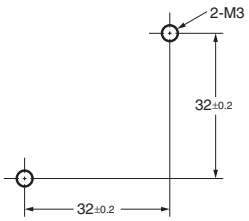


Case material	PPS resin
Filling	Epoxy resin

V680-D2KF67/-D2KF67M

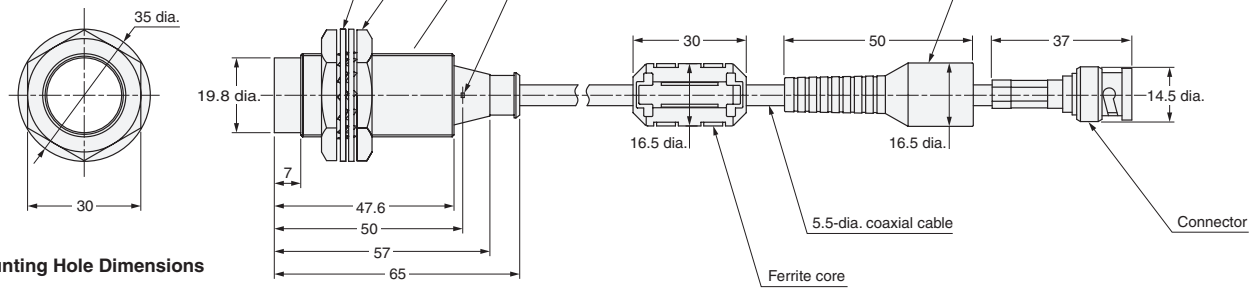


Mounting Hole Dimensions

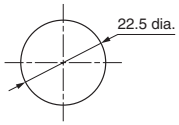


Case material	ABS resin
Filling	Epoxy resin

V680-HS52-W

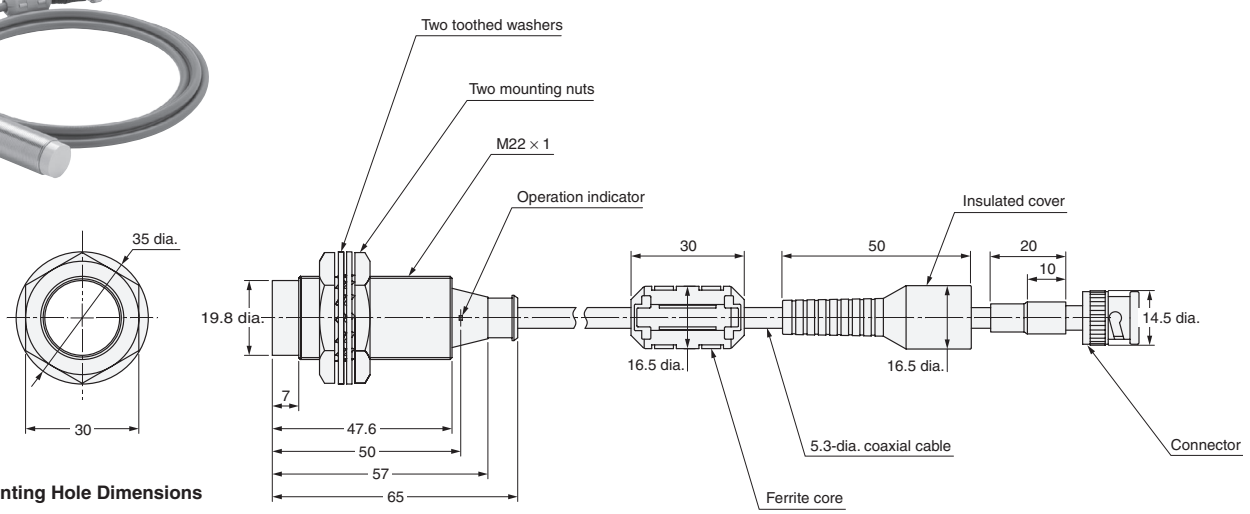


Mounting Hole Dimensions

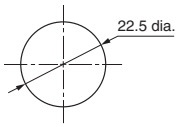


Case material	Brass
Transmission surface	PBT resin
Filling	Epoxy resin
Cable	PVC
Cable length	2M/12.5M

V680-HS52-R

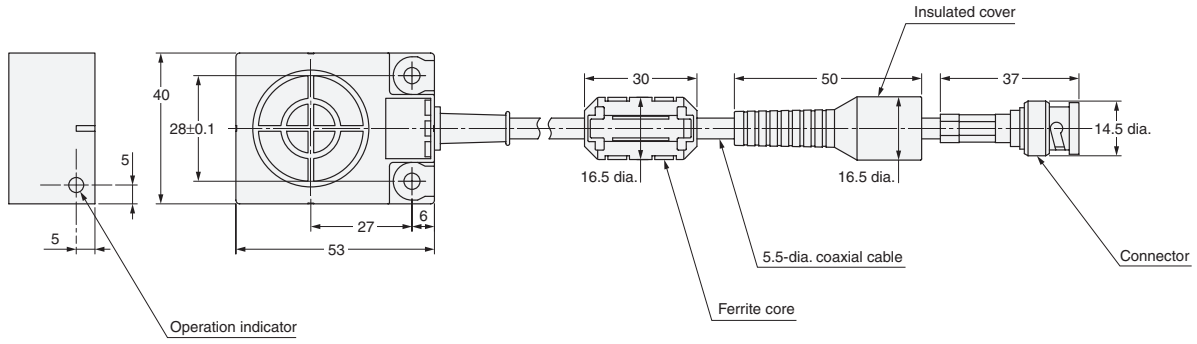


Mounting Hole Dimensions

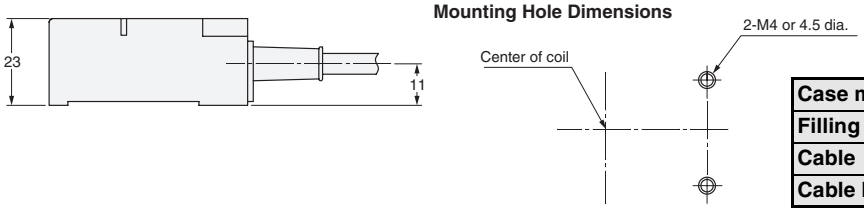


Case material	Brass
Transmission surface	PBT resin
Filling	Epoxy resin
Cable	PVC
Cable length	2M/12.5M

V680-HS63-W

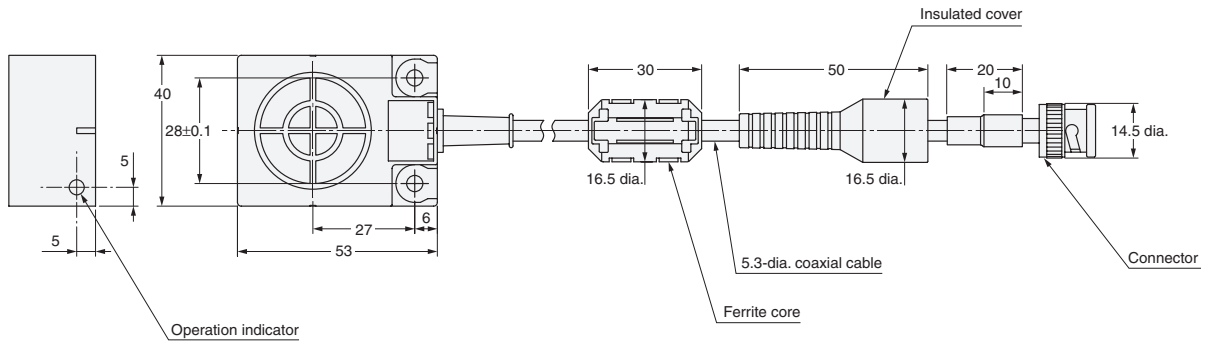


Mounting Hole Dimensions

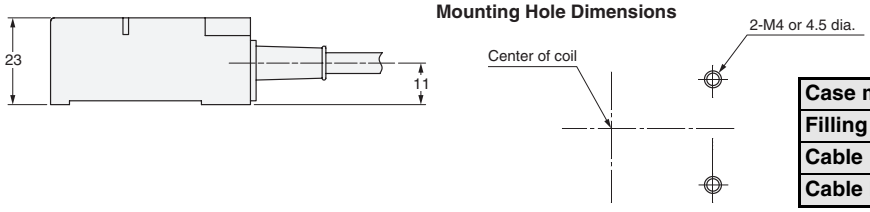


Case material	ABS resin
Filling	Epoxy resin
Cable	PVC
Cable length	2M/12.5M

V680-HS63-R

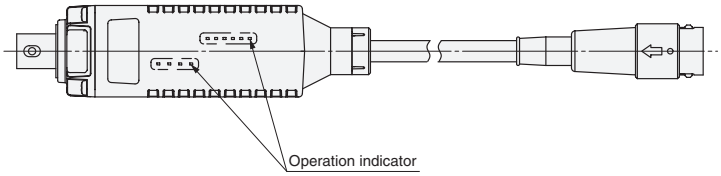


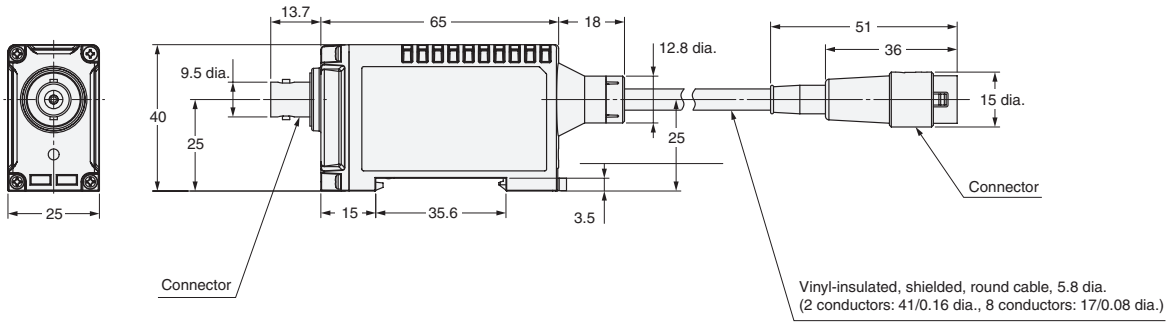
Mounting Hole Dimensions

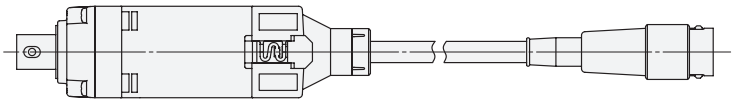


Case material	ABS resin
Filling	Epoxy resin
Cable	PVC
Cable length	2M/12.5M

V680-HA63A/-HA63B

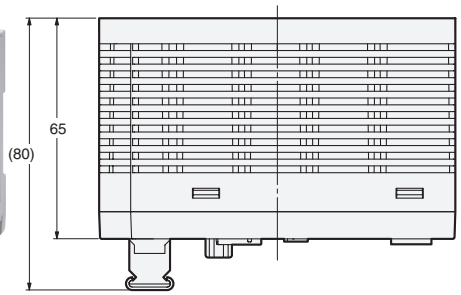




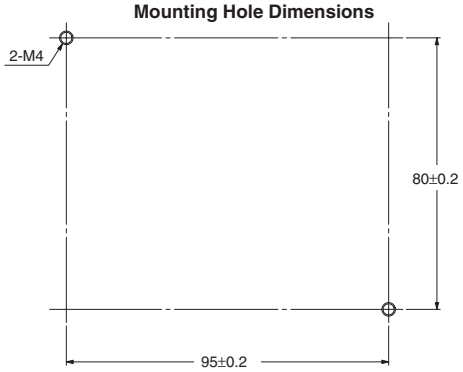


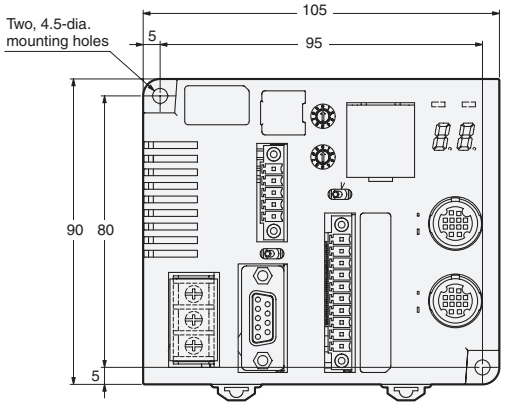
Case material	PC resin
Filling	Epoxy resin
Cable	PVC
Cable length	5M/10M

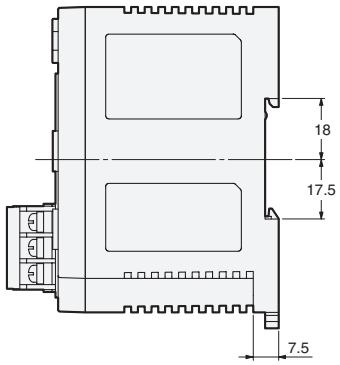
V680-CA5D01/-CA5D02



Mounting Hole Dimensions

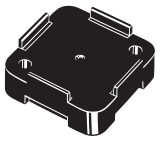


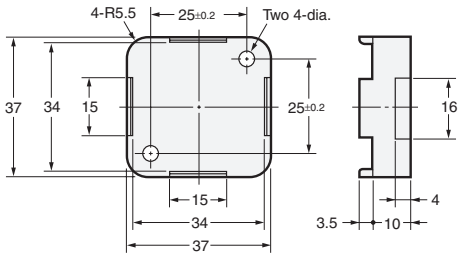




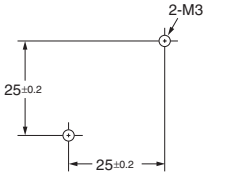
Accessory

V600-A86 Holder





Mounting Hole Dimensions



Case material	PPS resin

MEMO

MEMO

MEMO

READ AND UNDERSTAND THIS DOCUMENT

Please read and understand this document before using the products. Please consult your OMRON representative if you have any questions or comments.

WARRANTY

OMRON's exclusive warranty is that the products are free from defects in materials and workmanship for a period of one year (or other period if specified) from date of sale by OMRON.

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ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Cat. No. Q151-E1-01

In the interest of product improvement, specifications are subject to change without notice.

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